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(62) Document number(s) of the earlier application(s) in accordance with Art. 76 EPC:
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(54) **USING NON-POSITIONING SIGNALS FOR POSITIONING IN DOWNLINK AND/OR UPLINK**

(57) Systems and methods of a wireless communications system using signals not traditionally used for positioning purposes for positioning measurements in both uplink (UL) and downlink (DL) are described herein. A user equipment (UE) may generate a UE capability information message indicating one or more signal types that the UE can process for DL positioning measurements and/or that the UE can send for UL positioning measurements. The one or more signal types so indicat-

ed may include signals not traditionally used for positioning measurements. The UE may send, to the base station, the UE capability information message. The wireless communications system may then configure the base station and/or the UE to use such signal types with one or more positioning methods. In some embodiments, the base station may also indicate to the UE a subset of signals of an indicated type which should be processed for DL measurements/sent for UL measurements.

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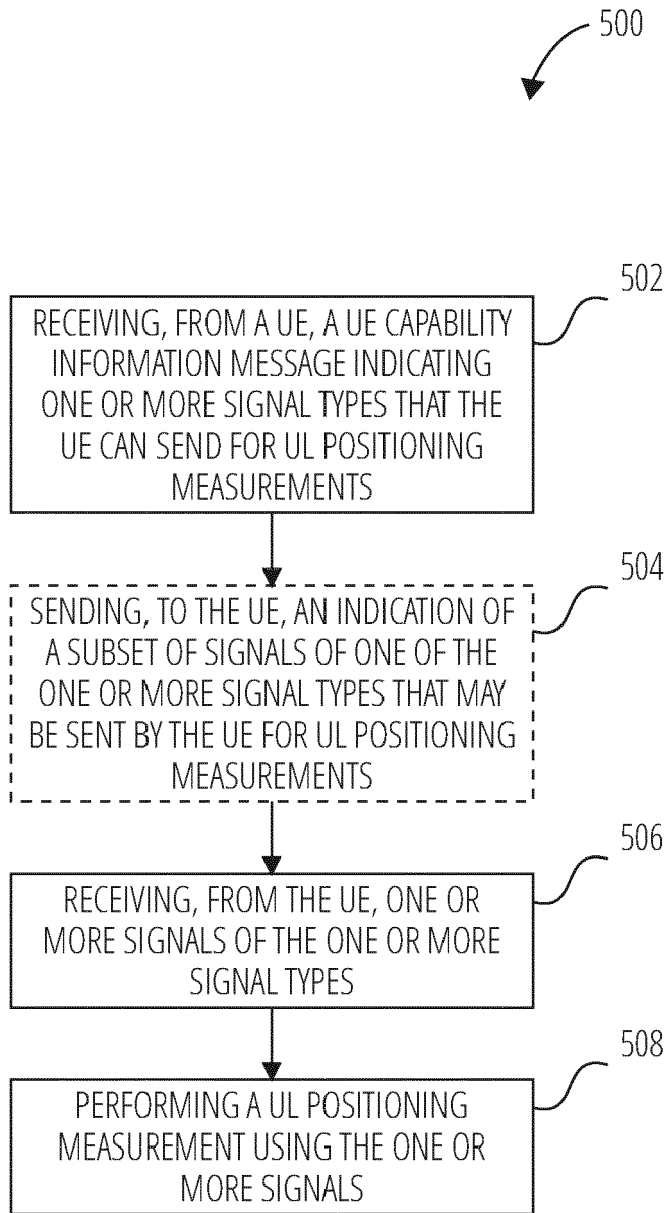


FIG. 5



EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2020/154289 A1 (MANOLAKOS ALEXANDROS [US] ET AL) 30 July 2020 (2020-07-30) * paragraph [0184] * * paragraph [0195] * * figure 2 *	1-15	INV. H04W64/00 G01S5/00
X	WO 2018/144667 A1 (QUALCOMM INC [US]) 9 August 2018 (2018-08-09) * paragraph [0090] * * paragraph [0112] - paragraph [0118]; figure 15 *	1-15	
A	WO 2020/164743 A1 (NOKIA TECHNOLOGIES OY [FI]) 20 August 2020 (2020-08-20) * page 18, line 33 - page 28, line 17 *	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			G01S H04W

The present search report has been drawn up for all claims

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Place of search Munich	Date of completion of the search 12 December 2023	Examiner Roberti, Vincenzo
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CATEGORY OF CITED DOCUMENTS
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.....
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ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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12-12-2023

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
10 15 20 25 30 35 40 45 50 55	WO 2020154289 A1	30-07-2020	AU 2020211927 A1 22-07-2021
			BR 112021013323 A2 14-09-2021
			CN 113302994 A 24-08-2021
			EP 3915308 A1 01-12-2021
			JP 2022518167 A 14-03-2022
			KR 20210116489 A 27-09-2021
			TW 202033028 A 01-09-2020
			US 2020235877 A1 23-07-2020
			WO 2020154289 A1 30-07-2020

WO 2018144667 A1	09-08-2018	CN 110235482 A 13-09-2019	
		EP 3577962 A1 11-12-2019	
		EP 4247072 A1 20-09-2023	
		US 2018220392 A1 02-08-2018	
		WO 2018144667 A1 09-08-2018	

WO 2020164743 A1	20-08-2020	EP 3925092 A1 22-12-2021	
		US 2022123817 A1 21-04-2022	
		WO 2020164743 A1 20-08-2020	
